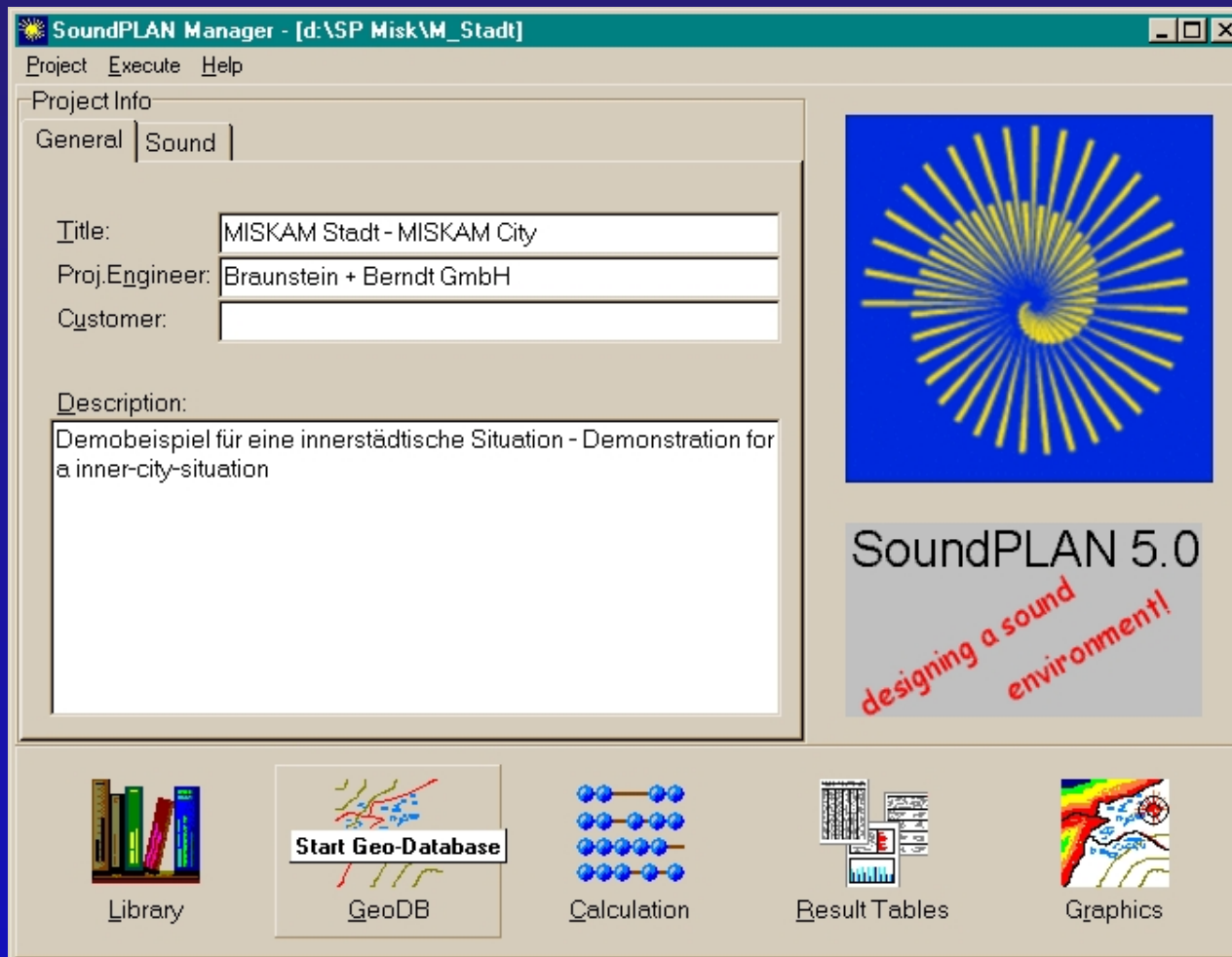


Short Guide:

MISKAM in SoundPLAN

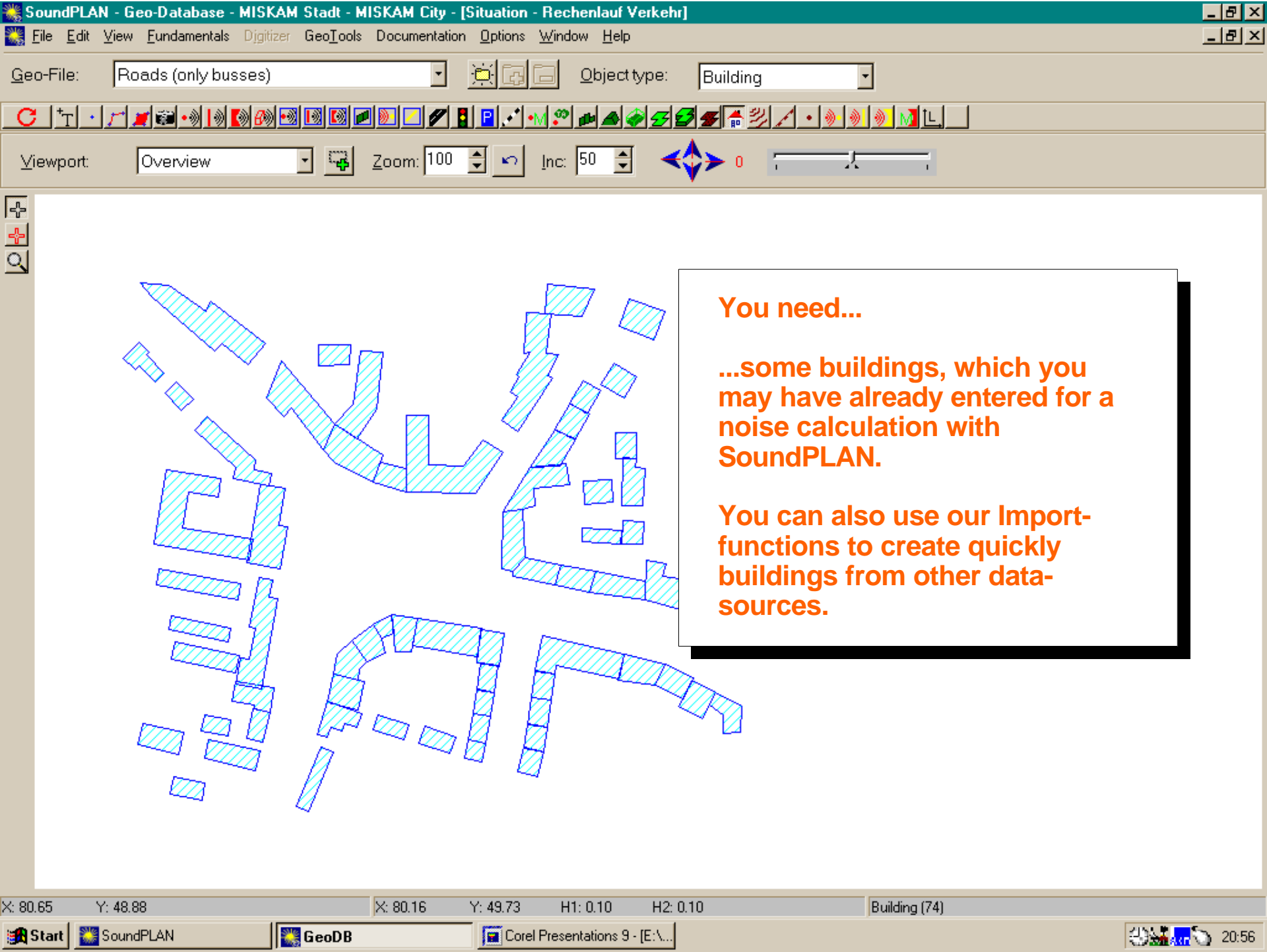
(For trained SoundPLAN-Users or general overview)

This slide show is optimized for 1024 x 768 px in Acrobat's full screen mode.
Please use the Page-Keys to move through the show!
Stop the show with the esc-key



For general descriptions of the GeoDatabase take a look in our User-Manual, Chapter 2 + 3

Step 1:
Data-Input in the GeoDatabase



Geo-File: Roads (only busses)

Object type: Building

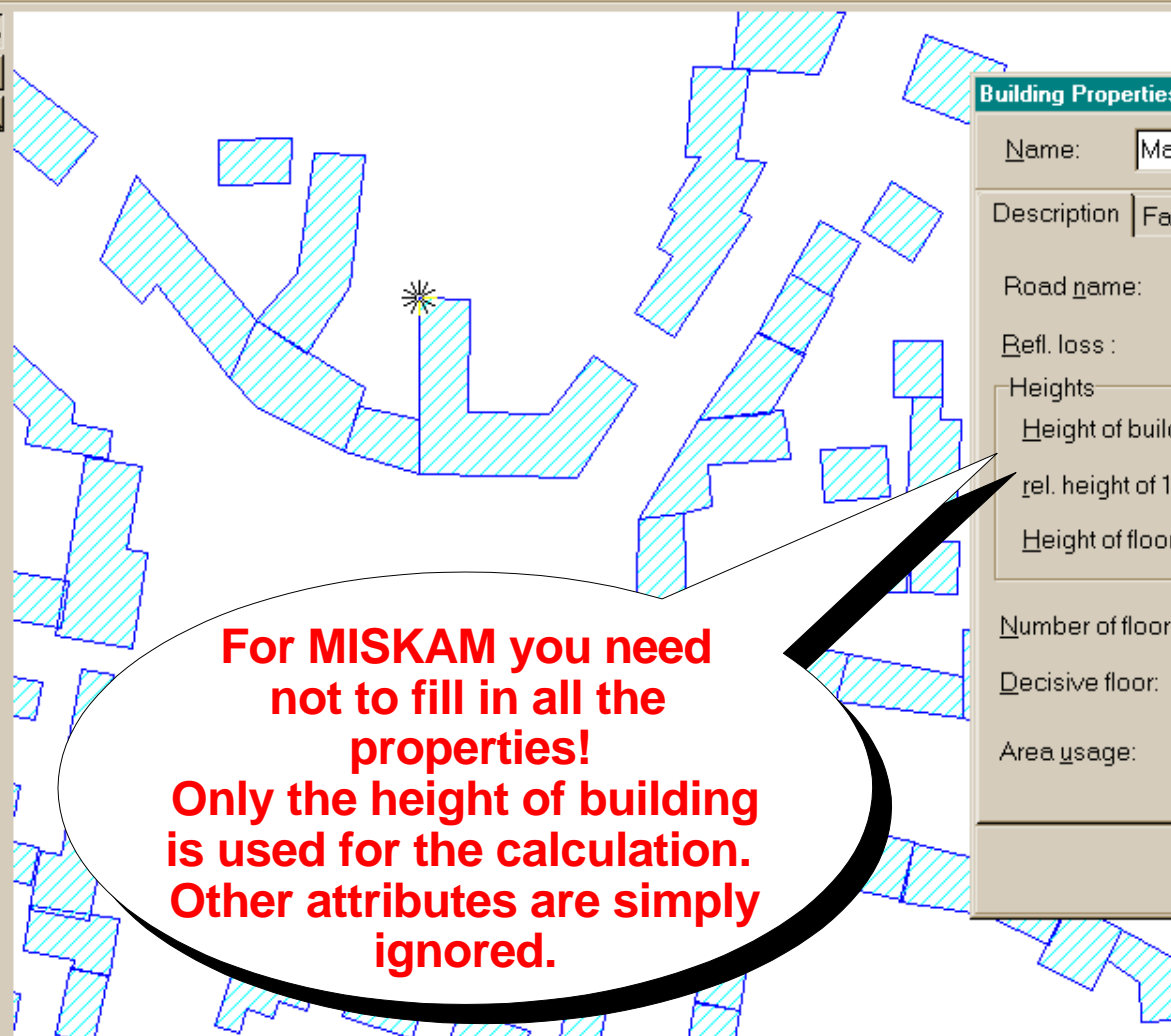
Viewport: Overview

Zoom:

150

Inc:

50



**For MISKAM you need
not to fill in all the
properties!
Only the height of building
is used for the calculation.
Other attributes are simply
ignored.**

Building Properties

Name: Marktstraße 25

Description | Facade Noise Map | Additional

Road name: Marktstraße

No: 25

Refl. loss:

1,00

Main building



Heights

Height of building:

18,00

rel. height of 1. floor:

2,40

Height of floors:

2,80

Number of floors:

6

Decisive floor:

2

Area usage:

(MK) Inner city

Ok

Cancel

Help

X: 115.40 Y: 193.46

X: 115.32

Y: 193.29

H1: 0.10

H2: 0.10

Insert new object

Geo-File: Roads (only busses)



Object type: Road



Viewport: Overview



Zoom:

150

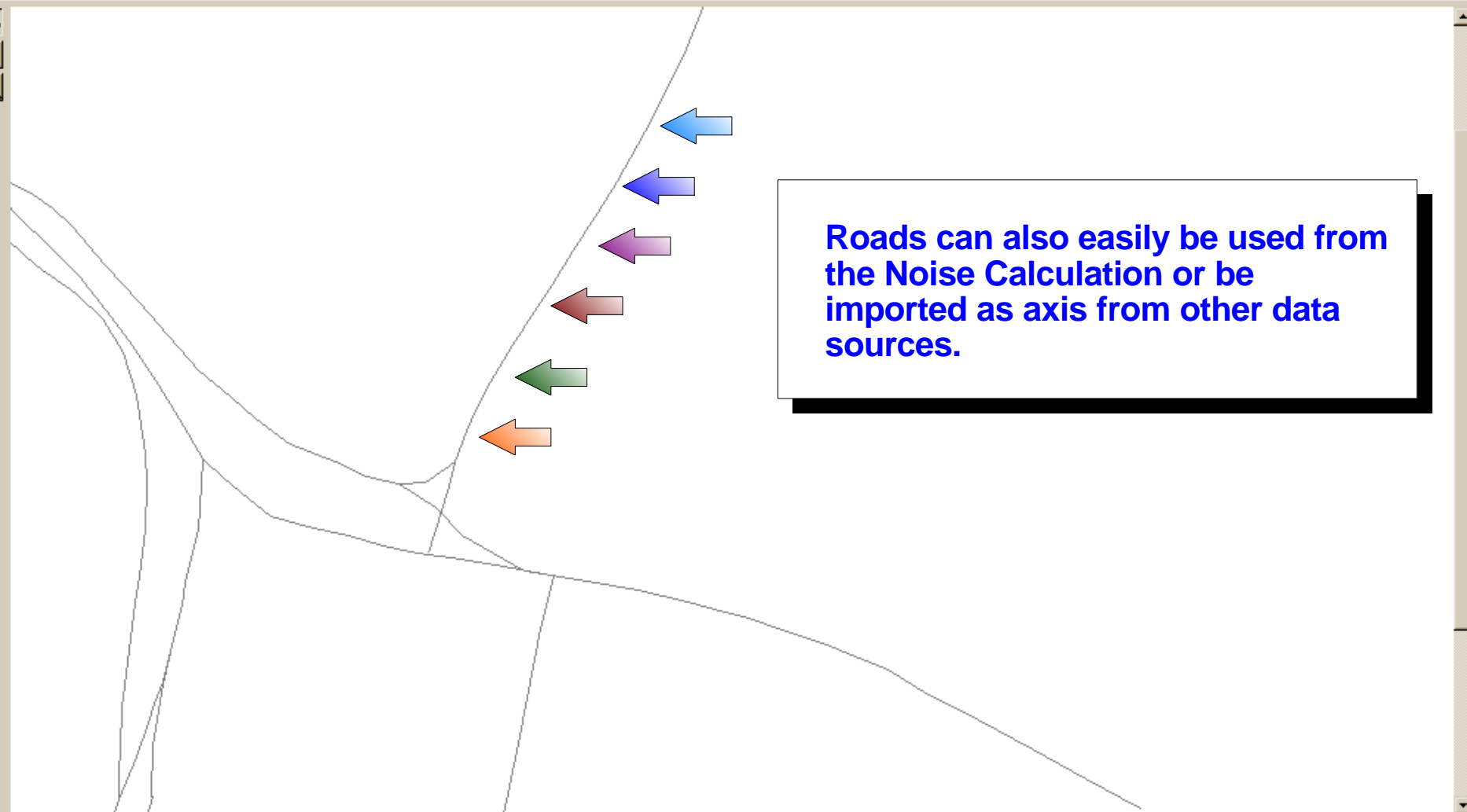


Inc:

50



0



Roads can also easily be used from the Noise Calculation or be imported as axis from other data sources.

Geo-File: Roads (only busses)

Object type: Road

Viewport: Overview

Zoom:

150

Inc:

50

There are only two properties which are used by MISKAM, all other attributes of the Noise Calculation are ignored.

Road properties

Name: Road name

Emission/Station

Profiles

Air pollutants

Bridge

Definition

Own definition

Single emission band

Lane width

left

right

5,00

5,00

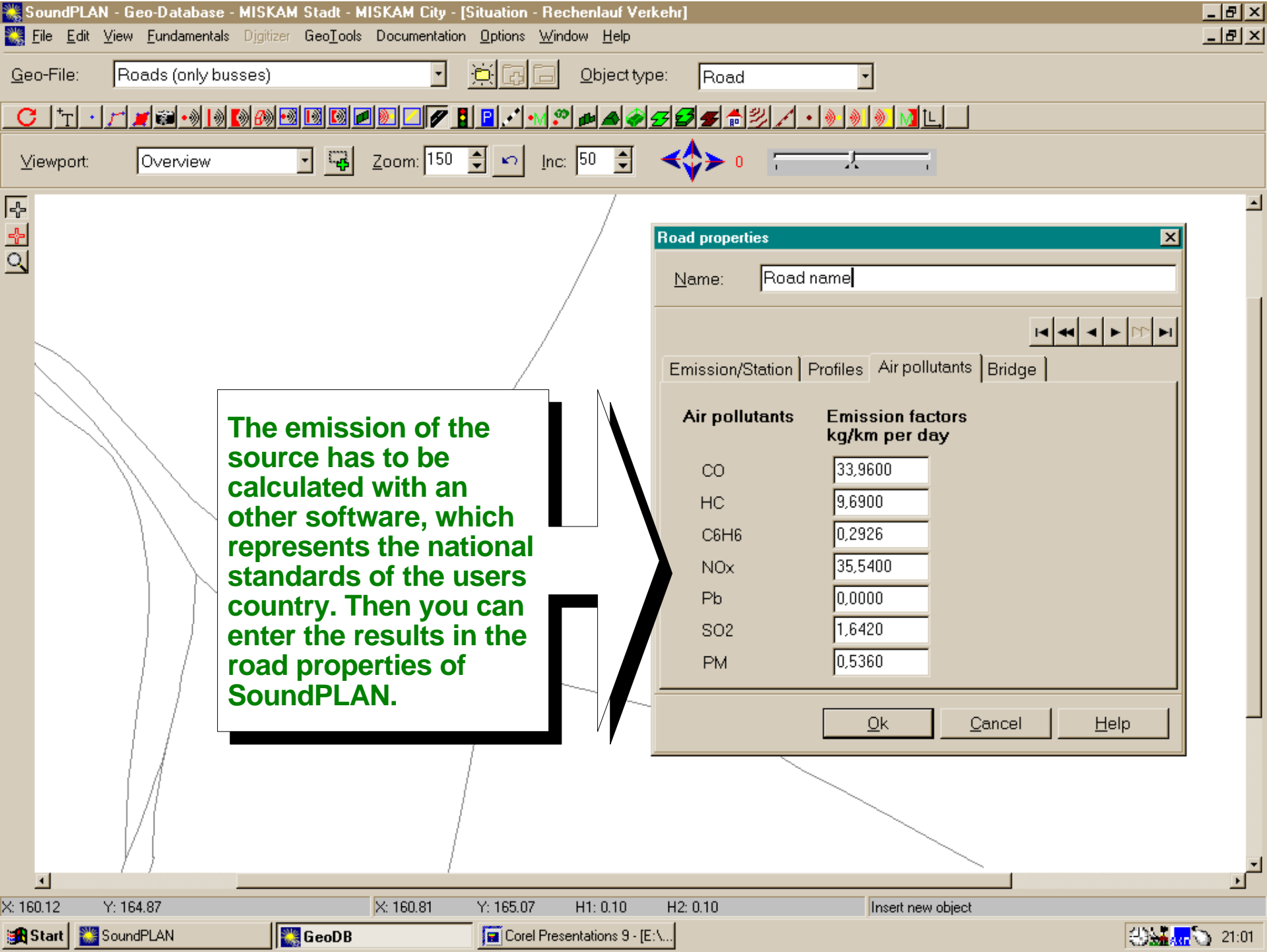
Distance emission band

0,00

Central reservation width

0,00

1. The width of the road band, measured from the axis to the left and to the right, is used to locate the emissions of the whole road.



The emission of the source has to be calculated with an other software, which represents the national standards of the users country. Then you can enter the results in the road properties of SoundPLAN.

Road properties

Name:

◀◀◀▶▶▶▶▶

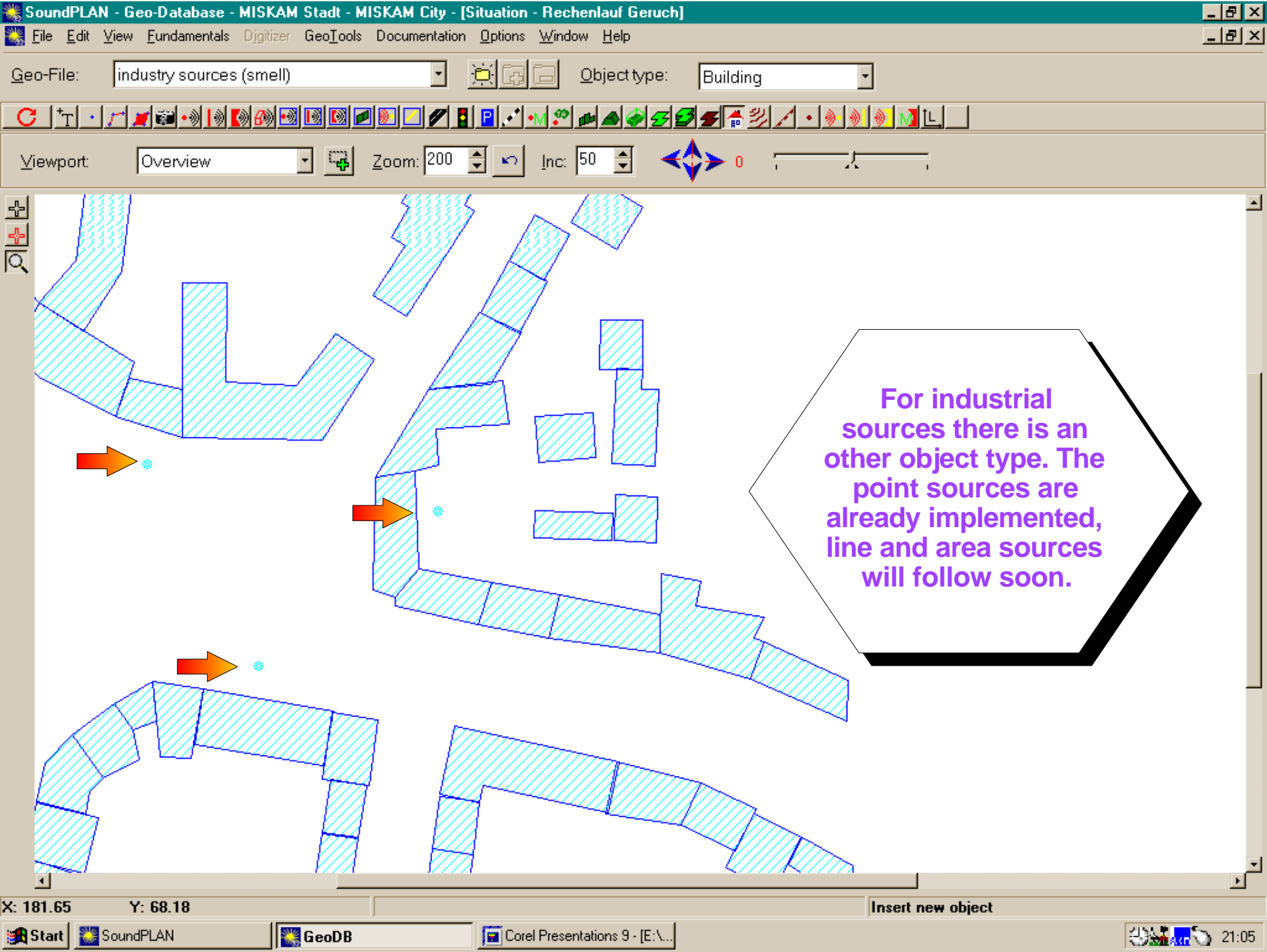
Emission/Station | Profiles | Air pollutants | Bridge

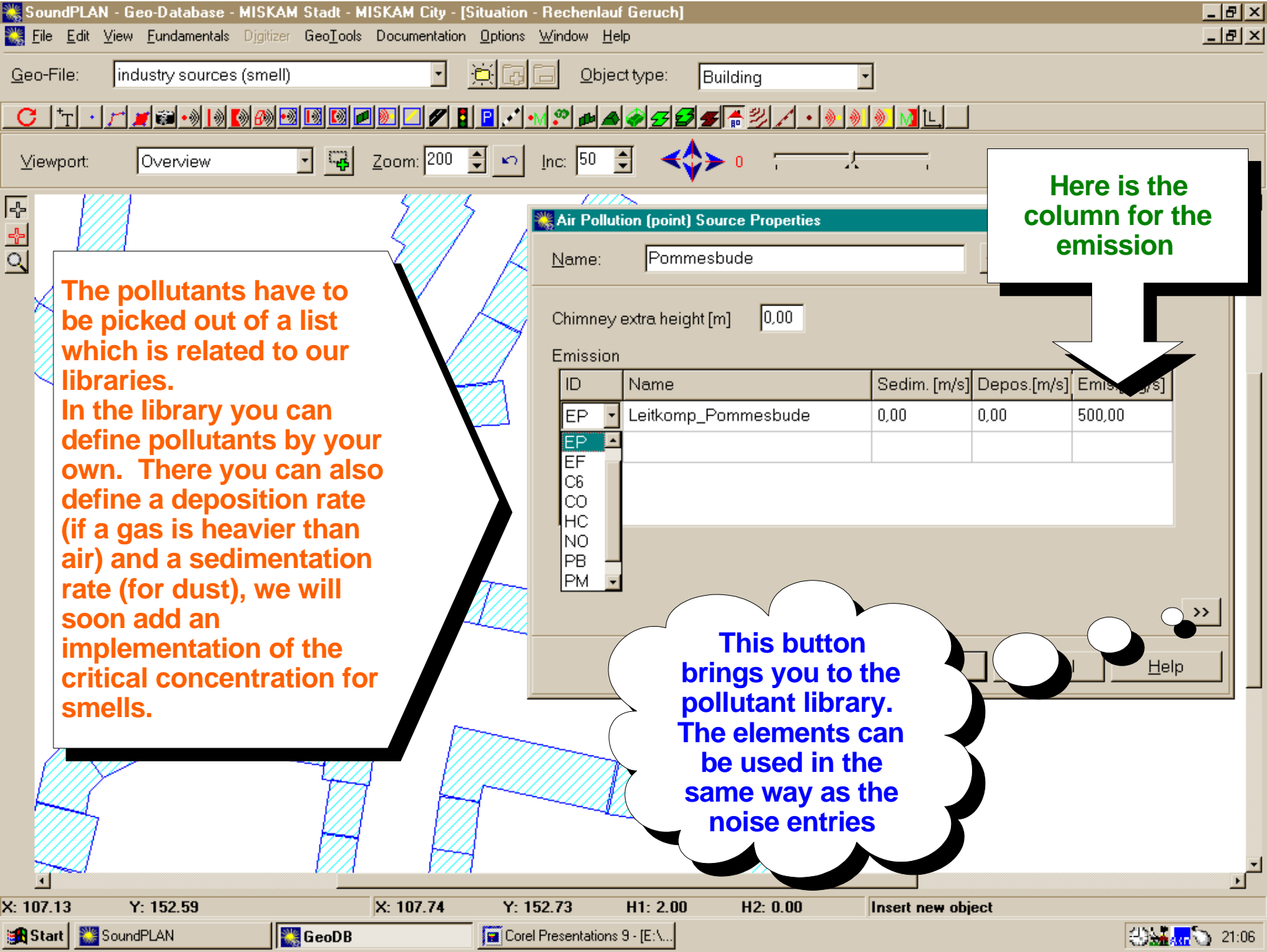
Air pollutants	Emission factors kg/km per day
CO	<input type="text" value="33,9600"/>
HC	<input type="text" value="9,6900"/>
C6H6	<input type="text" value="0,2926"/>
NOx	<input type="text" value="35,5400"/>
Pb	<input type="text" value="0,0000"/>
SO2	<input type="text" value="1,6420"/>
PM	<input type="text" value="0,5360"/>

Ok

Cancel

Help





Here is the column for the emission

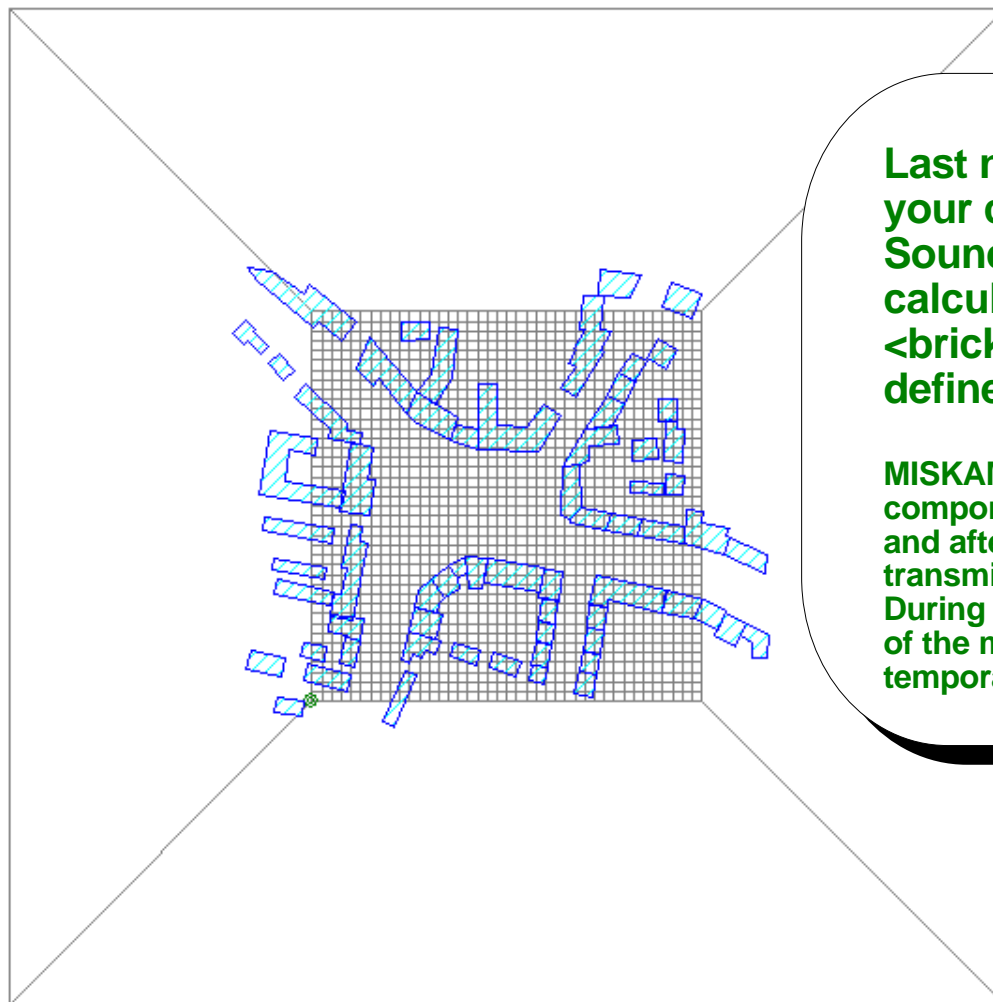
The pollutants have to be picked out of a list which is related to our libraries. In the library you can define pollutants by your own. There you can also define a deposition rate (if a gas is heavier than air) and a sedimentation rate (for dust), we will soon add an implementation of the critical concentration for smells.

This button brings you to the pollutant library. The elements can be used in the same way as the noise entries

Geo-File: buildings and calcaria Object type: Building



Viewport: Overview Zoom: 25 Inc: 50



Last not least you have to define your calculation area. SoundPLAN divides the whole calculation area into little <bricks>. The grid distances you define by your own.

MISKAM starts calculating meteorological components for this three dimensional grid and afterwards it works out the transmission of the pollutants. During the calculations the ground height of the model (and all your data) is temporarily set to zero.

Geo-File: buildings and calcareo

Object type: Building

The Calculation grid is defined by one single point and its properties. First you have to decide, how many rows and columns you want to see in your result graphics, and what width you need.

The area can be turned around the definition point

MISKAM calculation area Properties

Name: Miskam-Rechengebiet

Grid

Layer

Grid	No.	Dist.	Length	Expansion	No.	Factor
X	40	5,00	200,00	Top	10	1,20
Y	40	5,00	200,00	Left	10	1,20
				Right	10	1,20
				Bottom	10	1,20

Rotation

0

Ok

Help

Area of results

One single Point
for the whole
definition!

Area of calculation

Then you have to define the outer limits for the calculation area. MISKAM needs this because in this area you have also influences on the meteorological components which have to be implemented!

You create the outer area by telling SoundPLAN the number of additional columns and lines and a factor for the increasing of their width in the direction of the outer limits.

X: 29.62

Y: 29.14

X: 30.00

Y: 30.00

Geo-File: buildings and calcaria

Object type: Building

Viewport: Overview

Zoom: 25

Inc: 50

MISKAM calculation area Properties

Name: Miskam-Rechengebiet

Grid

Layer

Layers

17

Height

0,00

☐ equidistant

Layer

Height

1

0,00

2

1,00

3

2,00

4

3,00

5

5,00

Ok

Cancel

Help

Finally you have to say, how many calculation layers you want to create. The layers are defined by the distance to the models ground height. Their thickness can be chosen variable or equidistant.

There must be as many layers above the buildings as there are layers containing buildings! The modell must be three times higher than the upper limit of the highest layer containing buildings.

Now the geometrical part of the model is finished. You have seen, that there are only four object types used by MISKAM:

Now the geometrical part of the model is finished. You have seen, that there are only four object types used by MISKAM:

- **Buildings:** MISKAM doesn't know buildings like SoundPLAN, but it makes a difference between grid cells which can be passed by the wind and those which can not. For the calculation the entered buildings are changed automatically. The ground height of the buildings is set to zero.

Now the geometrical part of the model is finished. You have seen, that there are only four object types used by MISKAM:

- Buildings: MISKAM doesn't know buildings like SoundPLAN, but it makes a difference between grid cells which can be passed by the wind and those which can not. For the calculation the entered buildings are changed automatically.
- Roads: The entered roads will be changed from the SoundPLAN geometry to this grid geometry MISKAM is working with. The SoundPLAN road contains two height informations: The ground height (absolute), which is set to zero, and the road height (absolute), which can be used to mention the height above ground (by calculating the difference between both absolute heights).

Now the geometrical part of the model is finished. You have seen, that there are only four object types used by MISKAM:

- Buildings: MISKAM doesn't know buildings like SoundPLAN, but it makes a difference between grid cells which can be passed by the wind and those which can not. For the calculation the entered buildings are changed automatically.
- Roads: The entered roads will be changed from the SoundPLAN geometry to this grid geometry MISKAM is working with. The SoundPLAN road contains two height informations: The ground height (absolute), which is set to zero, and the road height (absolute), which can be used to mention the height above ground (by calculating the difference between both absolute heights).
- **Industrial sources:** The ground height is set to zero, then the source height is calculated relative to the ground, same as it is done with the roads. But for the industry sources you can also add a height correction for hot sources to take the effect of convection into account.

Now the geometrical part of the model is finished. You have seen, that there are only four object types used by MISKAM:

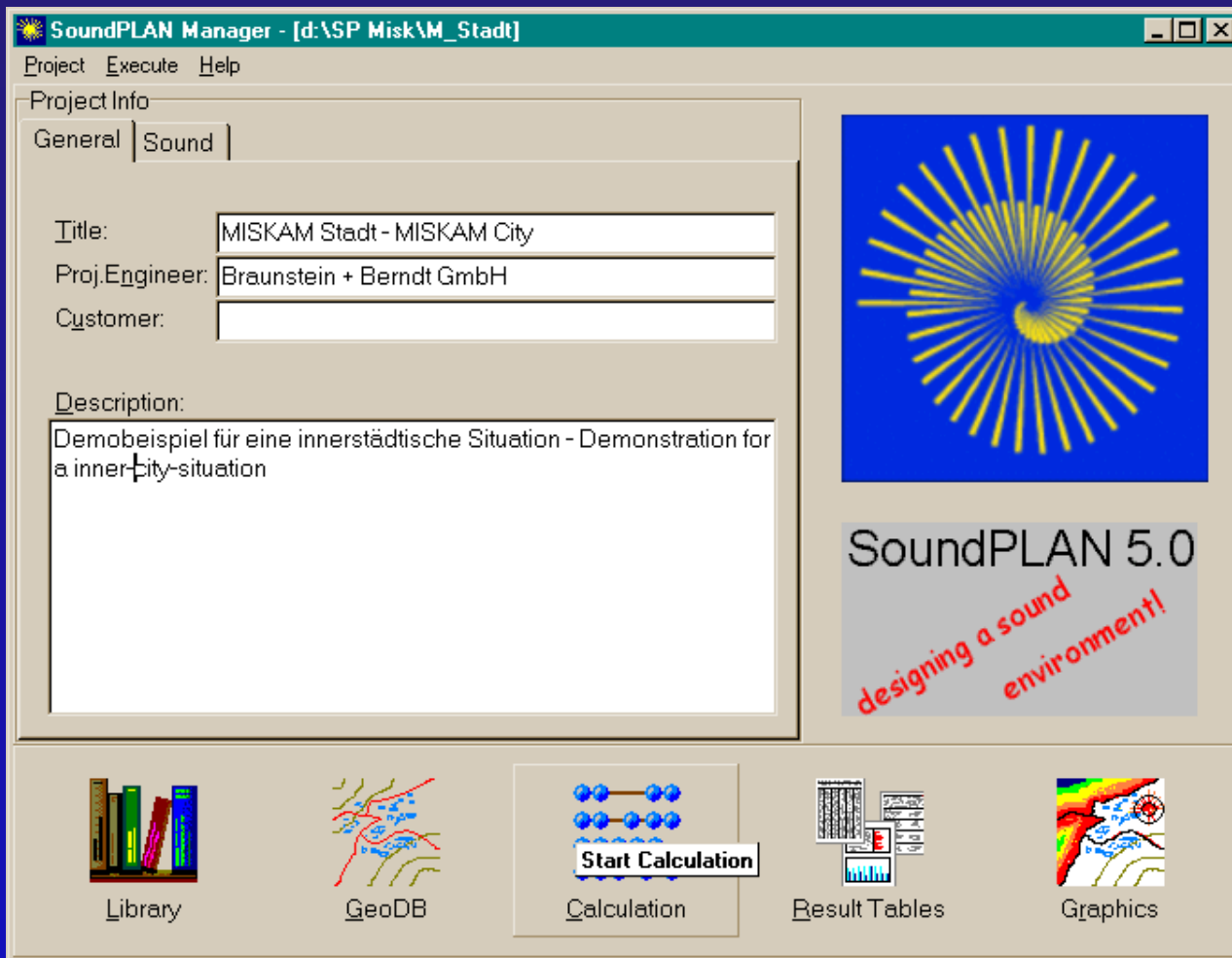
- Buildings: MISKAM doesn't know buildings like SoundPLAN, but it makes a difference between grid cells which can be passed by the wind and those which can not. For the calculation the entered buildings are changed automatically.
- Roads: The entered roads will be changed from the SoundPLAN geometry to this grid geometry MISKAM is working with. The SoundPLAN road contains two height informations: The ground height (absolute), which is set to zero, and the road height (absolute), which can be used to mention the height above ground (by calculating the difference between both absolute heights).
- Industrial sources: The ground height is set to zero, then the source height is calculated relative to the ground, same as it is done with the roads. But for the industry sources you can also add a height correction for hot sources to take the effect of convection into account.
- **Calculation area:** The calculation area makes a difference between the zone of results, which will be shown, and the zone of results which are only calculated to take effects outside the result zone into account.

Now the geometrical part of the model is finished. You have seen, that there are only four object types used by MISKAM:

- At last the height of the source has to be adapted to the middle of the layer next to the source. So be shure, that your first layers are not too thick!

Now the geometrical part of the model is finished. You have seen, that there are only four object types used by MISKAM:

- At last the height of the source has to be adapted to the middle of the layer next to the source. So be shure, that your first layers are not too thick!
- Sources can not share their grid cells with buildings! They will be moved aside (if they have been defined beneath a building) or upon (if they have been defined on top of a building).



For general descriptions of the Calculation Kernel take a look into our User-Manual, Chapter 5

Step 2:
Define a Calculation Run

Calc	Name	Calc Type	Result	Data
Yes	Demonstration (stop it soon)	MISKAM	1	"Rechenlauf Verkehr.sfl"
	Calc time: 16:54:09 [h:m:s] - Industry sources	MISKAM	2	"Rechenlauf Geruch.sfl"
			45	"Rechenlauf Verkehr.sfl"
			55	"Rechenlauf Verkehr.sfl"

Run Properties - "Demonstration (stop it soon)"

General Settings MISKAM Description

☒ Calculation enabled

Calculation type: MISKAM

"Rechenlauf Verkehr.sfl" >>

Number for result files: 1

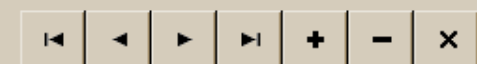
< Prior Next > OK Cancel Help

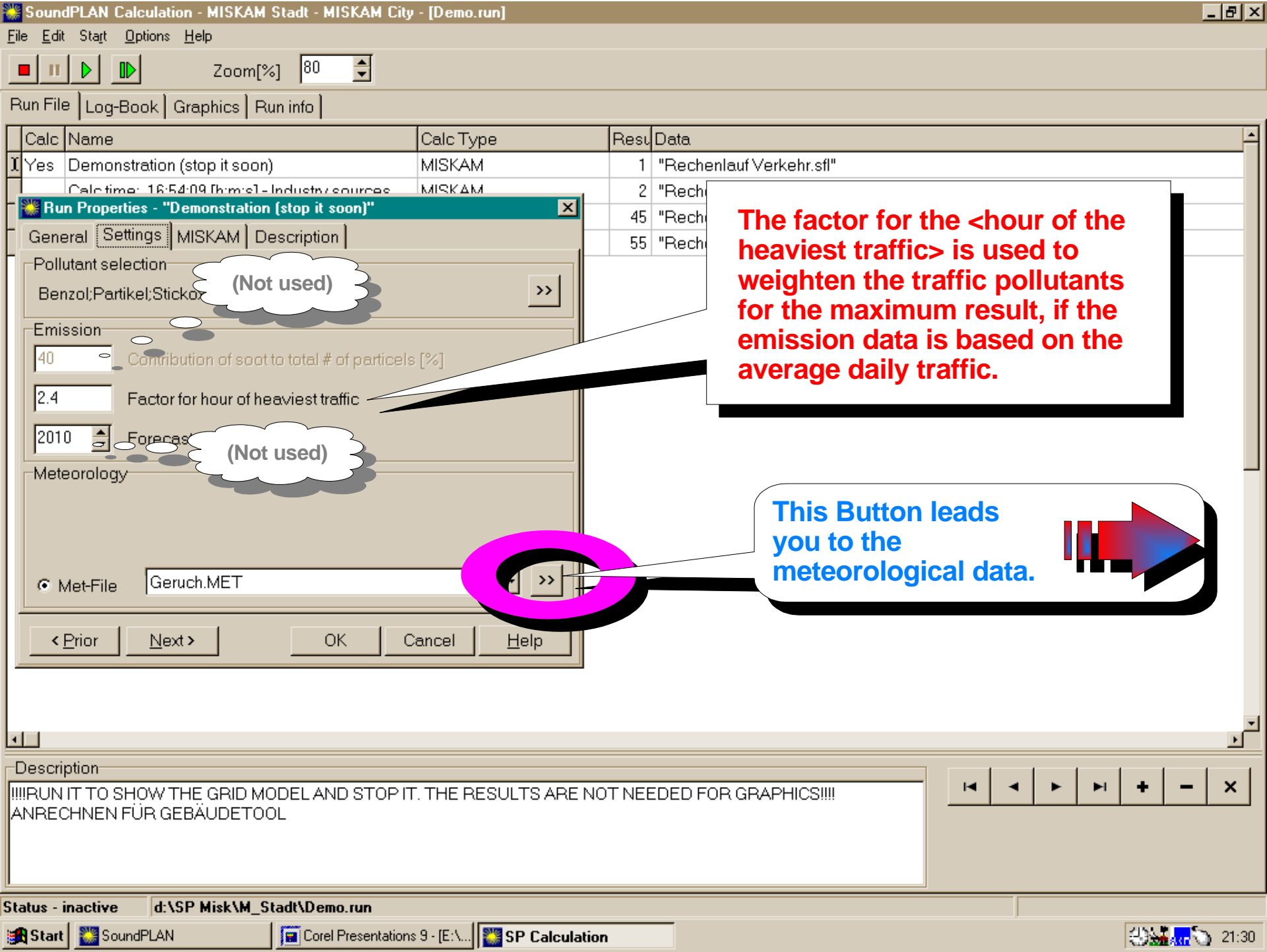
In the run property window you choose the calculation type MISKAM. Then you enter the list of your data files and give a number to the run as usual.

Attention! Don't use run numbers which you have already in use for noise calculations of the same project!

Description

!!!!RUN IT TO SHOW THE GRID MODEL AND STOP IT. THE RESULTS ARE NOT NEEDED FOR GRAPHICS!!!!
ANRECHNEN FÜR GEBÄUDET00L

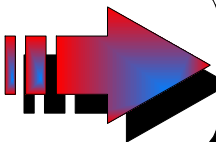




Calc	Name	Calc Type	Resu	Data
Yes	Demonstration (stop it soon)	MISKAM	1	"Rechenlauf Verkehr.sfl"
	Calc time: 16:54:09 [h:m:s] - Industry sources	MISKAM	2	"Rech
			45	"Rech
			55	"Rech

The factor for the <hour of the heaviest traffic> is used to weighten the traffic pollutants for the maximum result, if the emission data is based on the average daily traffic.

This Button leads you to the meteorological data.



File Edit Start Options Help

Zoom[%] 80

Run File Log-Book Graphics Run info

Calc	Name	Calc Type	Resu	Data
1	Demonstration (stop it soon)	MISKAM	1	"Rechenlauf Verkehr.sfl"

Meteorology - GERUCH.MET

Files Edit

Rel. height	Wind direction	Wind speed	AK	Layer	Frequency	Sum
30.0	0.0	1.0	d	0.0	600.0	8760
30.0	60.0	2.0	d	0.0	1000.0	
30.0	120.0	3.0	d	0.0	2500.0	
30.0	180.0	2.0	d	0.0	950.0	
30.0	240.0	1.0	d	0.0	350.0	
30.0	300.0	1.0	d	0.0	300.0	
30.0	30.0	2.0	d	0.0	2000.0	
30.0	90.0	3.0	d	0.0	1060.0	

Cancel Help

The frequency column allows you, to weighten the meteorological cases by the frequency of their appearance. If you use the number of hours, you can i.e. also count (for each cell of your calculation area) the number of hours which are exceeding critical limits.

The number of different cases you want to calculate, depends on the number of lines you have defined in this file. If you want to calculate only one of the given cases, use the 'files>save as' command to create a copy and then delete all the cases you don't need. You should not have more than 24 or 36 cases. If your wind data shows thousands of cases, you have to classify them outside of SoundPLAN, then use the <copy and paste> method to bring them i.e. from excel to the meteorology file (first you have to create as many empty lines as you want to fill).

Calc	Name	Calc Type	Resu	D
Yes	Demonstration (stop it soon)	MISKAM	1	"P
	Calc time: 16:54:09 [h:m:s] - Industry sources	MISKAM	2	"P
			45	"P
			55	"Rech

Here you open the window you see below for choosing the pollutants which you want to calculate.

Run Properties - "Demonstration (stop it soon)"

General Settings MISKAM Description

Pollutant selection

Benzol;Partikel;Stickoxide;

Emission

40 Contrib

2.4 Factor

2010 Forec

Meteorology

Met-File Ger

< Prior Next >

Description

!!!!!!RUN IT TO SHOW T
ANRECHNEN FÜR GE

Select pollutants

Selected pollutants

C6	Benzol
PM	Partikel
NO	Stickoxide

Available Pollutants

ER	Leitkomp_Reinigung
EP	Leitkomp_Pommesbude
EF	Leitkomp_Abluft_Fisch
C6	Benzol
CO	Kohlenmonoxid
HC	Kohlenwasserstoffe
NO	Stickoxide
PB	Blei
PM	Partikel
SO	Ruß

Combination

OK Cancel Help

Calc	Name	Calc Type	Res
Yes	Demonstration (stop it soon)	MISKAM	
	Calc time: 16:54:09 [h:m:s] - Industry sources	MISKAM	

Run Properties - "Demonstration (stop it soon)"

General Settings MISKAM Description

Roughness

☒ homogeneous Roughness length ground [cm] 10

☐ inhomogeneous

Remaining areas low buildings

Walls [cm] 1

1D-Initialization of wind field [cm] 10

Propagation

Correction steps for advection 0

Save for each situation

☐ Wind fields ☐ immission

< Prior Next > OK

Description

!!!!!!RUN IT TO SHOW THE GRID MODEL AND S
ANRECHNEN FÜR GEBÄUDETOOL

The roughness length is needed to adapt the windspeed of your meteorological measurement location to the specific height of the layers above ground.

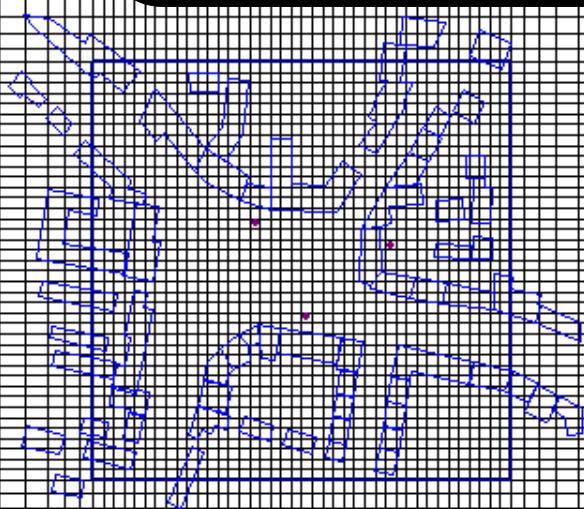
('Inhomogene' is not yet realized)

For the transmission of pollutants you have the possibility to choose the number of correction steps for advection (normally not necessary for roads and line sources)

If you need only mean and maximum results, it is not useful to save all the single results for the meteorological cases.

(I.e. 24 Cases x 20 Layers = 480 Windfields and additional 480 gridmaps per pollutant!)

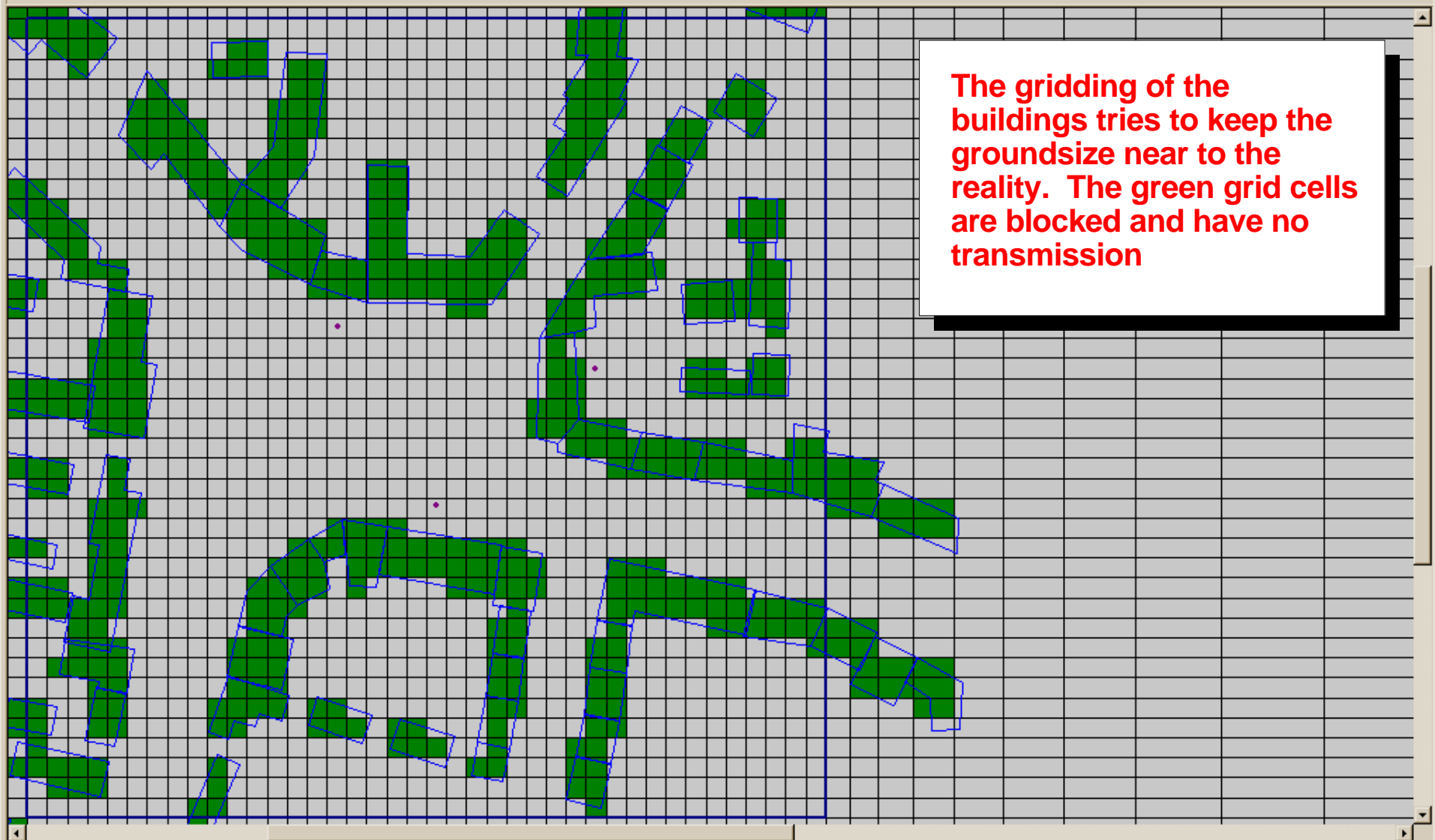
When the calculation has started, SoundPLAN shows you the calculation grid. Here you see also the increase of the outer calculation area, which you have not seen in the Geo-Database.





Zoom[%] 260

Demonstration (stop it soon)

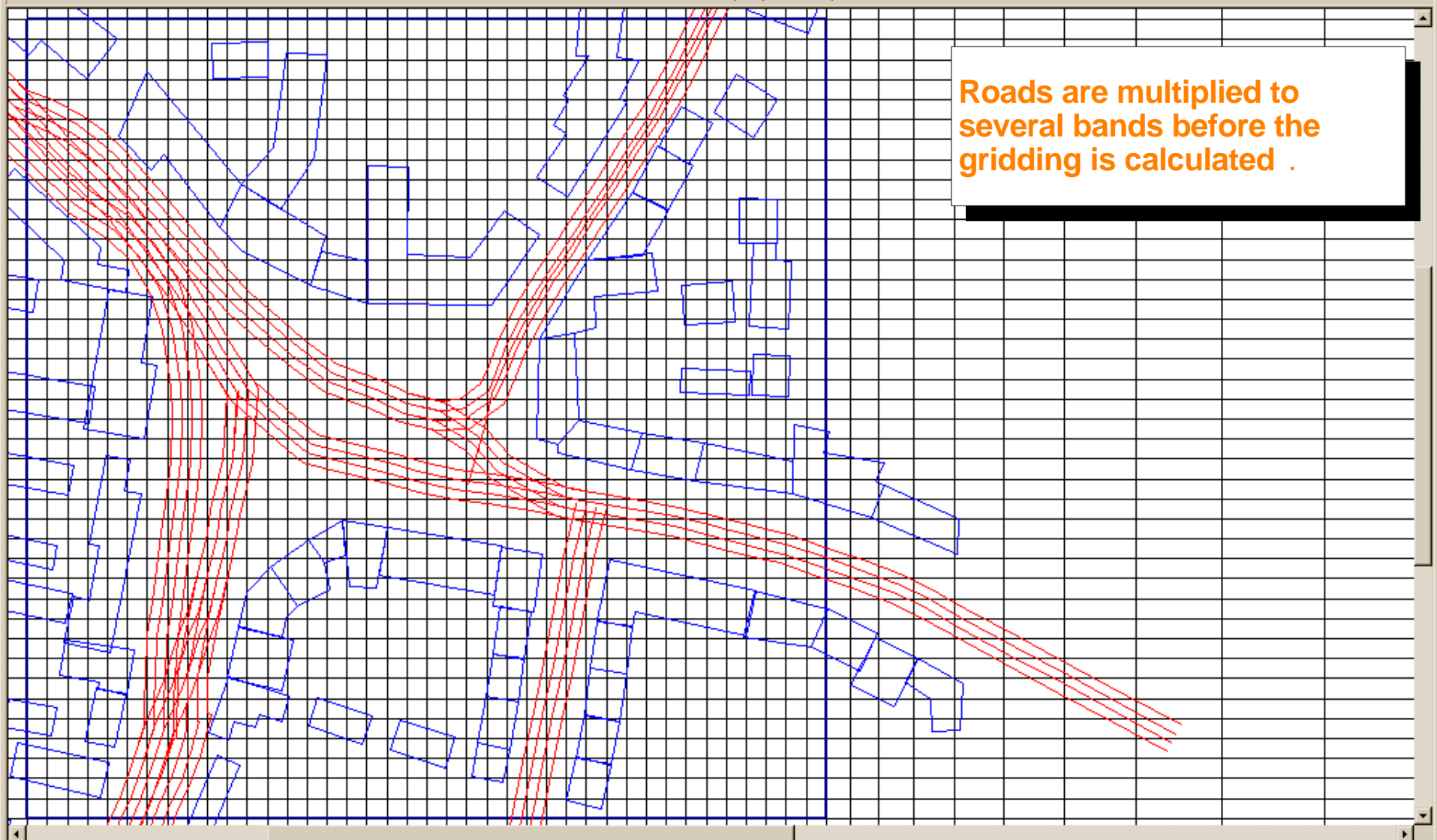


The gridding of the buildings tries to keep the groundsize near to the reality. The green grid cells are blocked and have no transmission



Zoom[%] 260

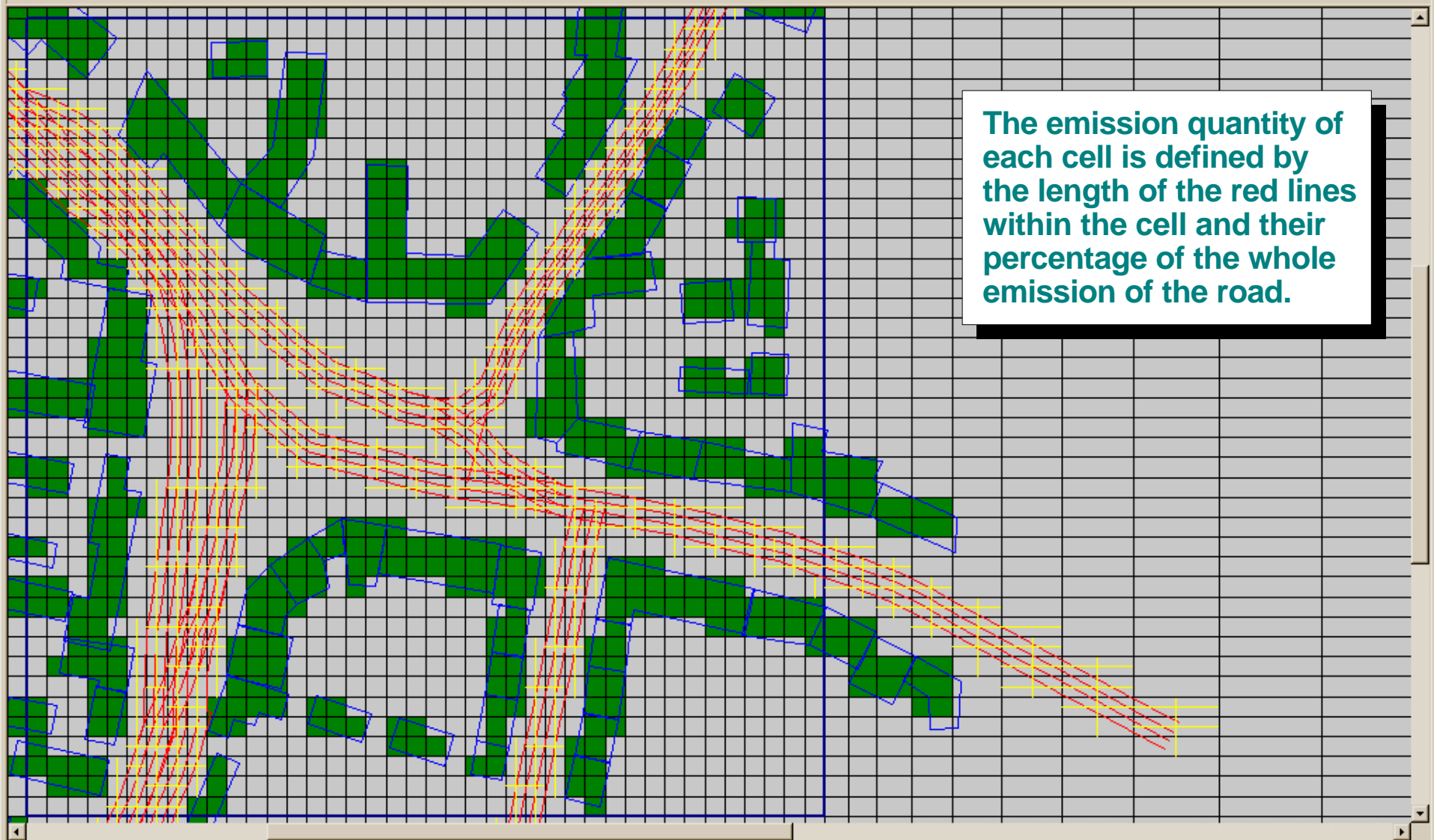
Demonstration (stop it soon)



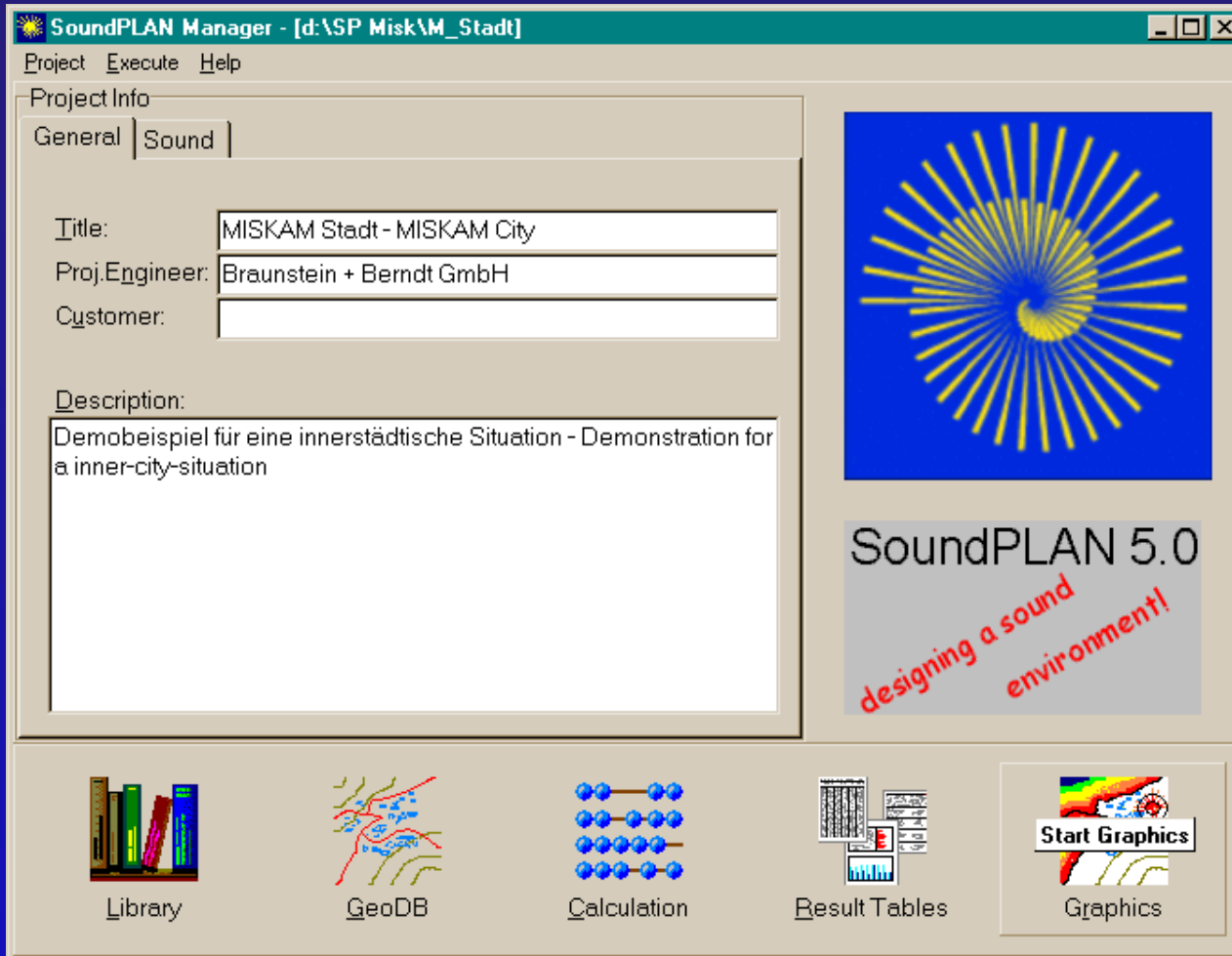


Zoom[%] 260

Demonstration (stop it soon)

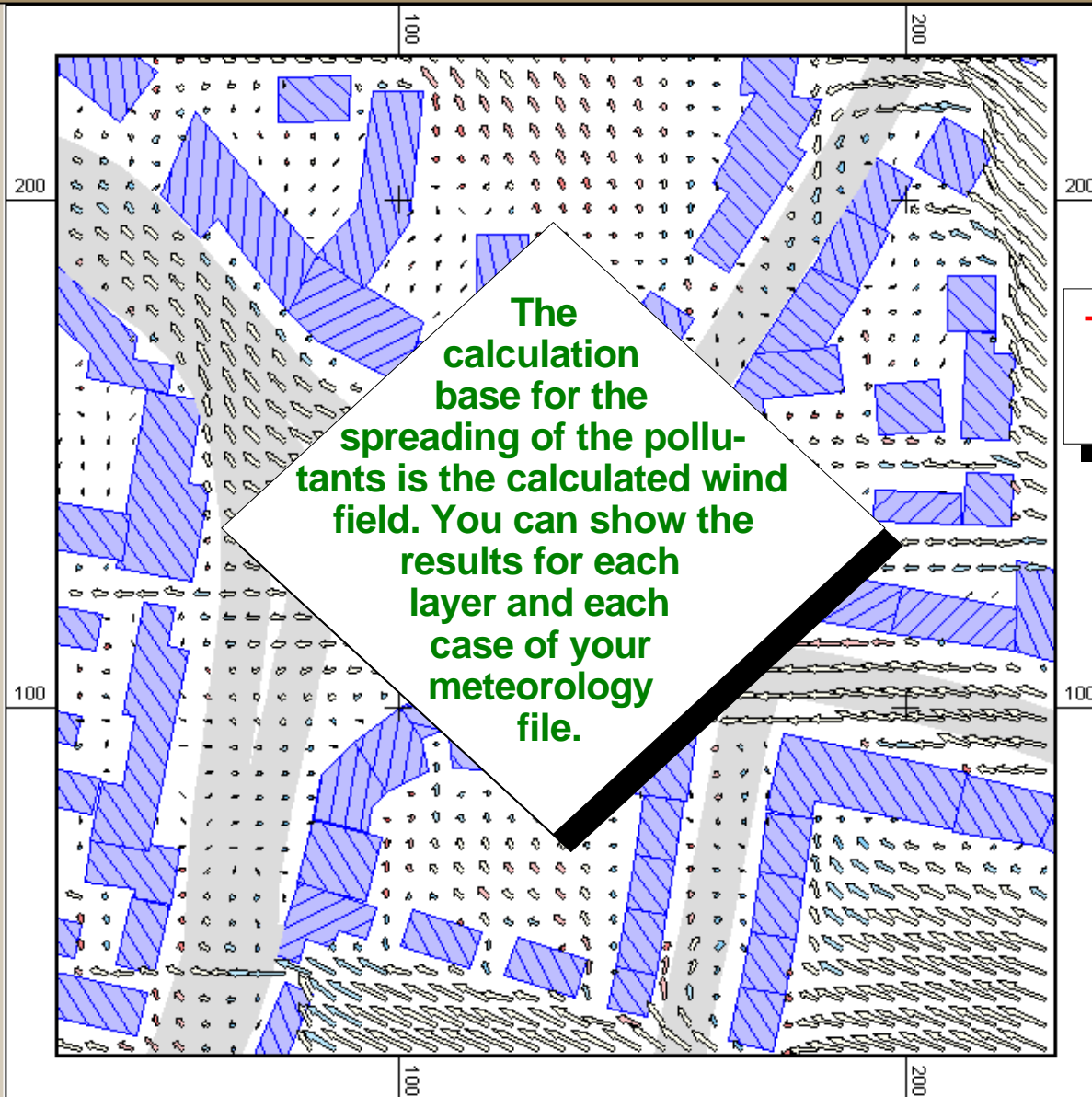
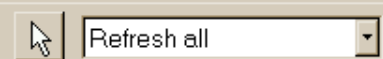


The emission quantity of each cell is defined by the length of the red lines within the cell and their percentage of the whole emission of the road.



For general descriptions of the Graphics module take a look into our User-Manual, Chapter 7

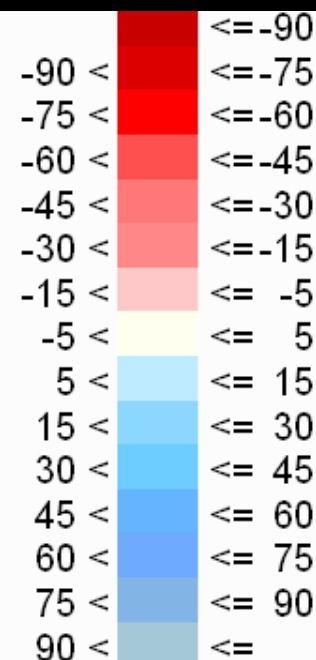
Step 3:
Graphical Result Presentation

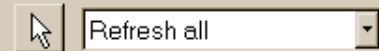


MISKAM Vollversion

Windfeld
in 2,5 m Höhe
(Wind 3m/s aus 120 °,
gemessen in 30 m Höhe)

The color shows the inclination,
the length of arrows shows the
windspeed.





To see the arrows you select the file type <windfield MISKAM>, choose a file and from the file a meteorological case...

File selection manager

Select file type
Wind field MISKAM

Name	Description
miskam.001	De
miskam.002	Ge
miskam.045	F_F
miskam.055	F_F
miskam.099	ZU
Miswin02.045	F_F

☐ Recalculate format

Wind field MISKAM

Meteorology case
Wind direction: 120 Wind speed: 3.0 Layer: 0.0

Plane selection: 5.Layer: 5.0 - 10.0 m

Scale
Skala2

Legend
new

☒ complete

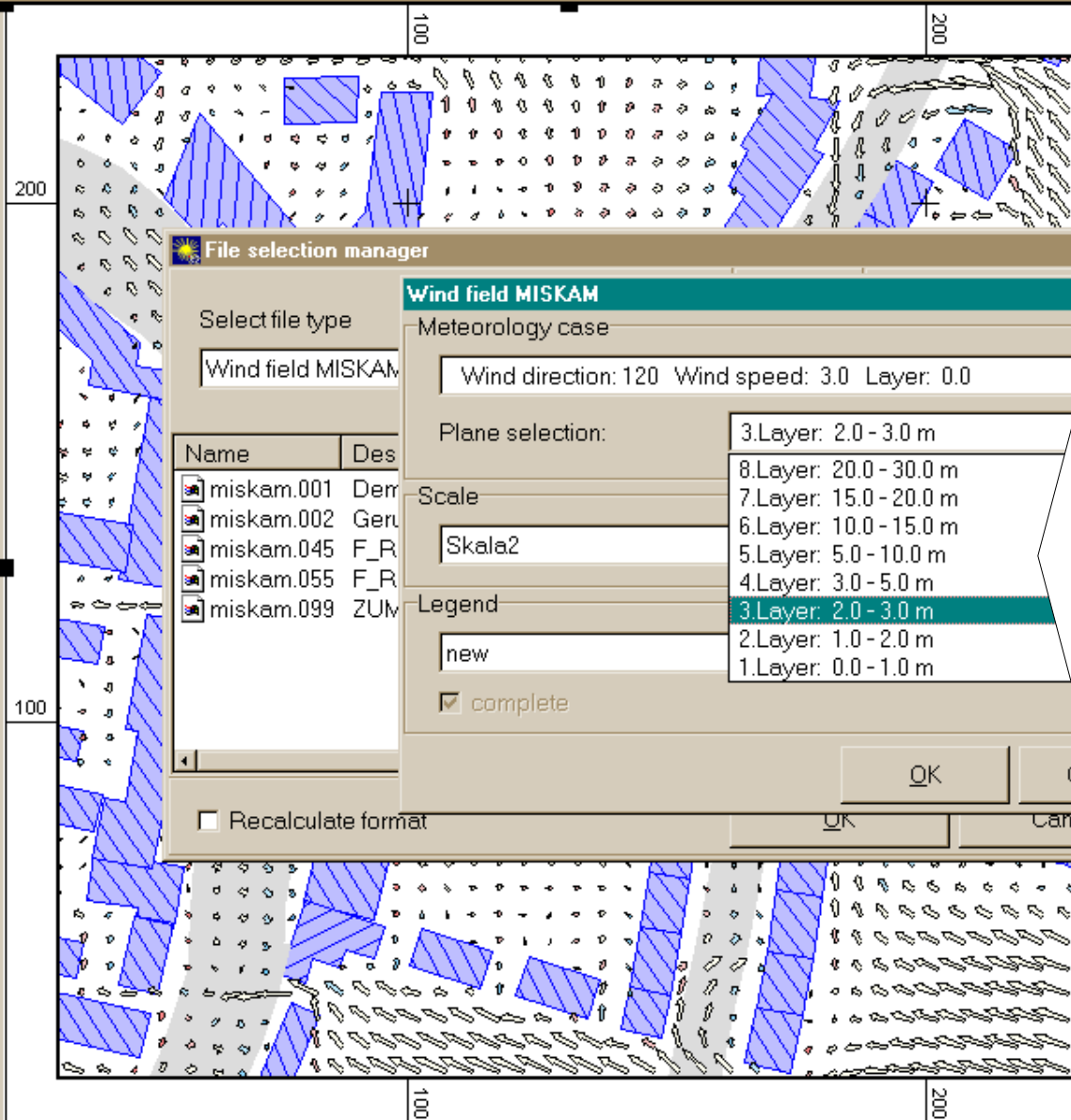
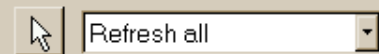
OK Cancel

AM Vollversion

Windfeld
h 2,5 m Höhe
120 °,
h Höhe)

Description
Calculation of traffic source

g
len
= -90
= -75
= -60
= -45
= -30
= -15
= -5
= 5
= 15
= 30
30 < <= 45
45 < <= 60
60 < <= 75
75 < <= 90
90 < <=



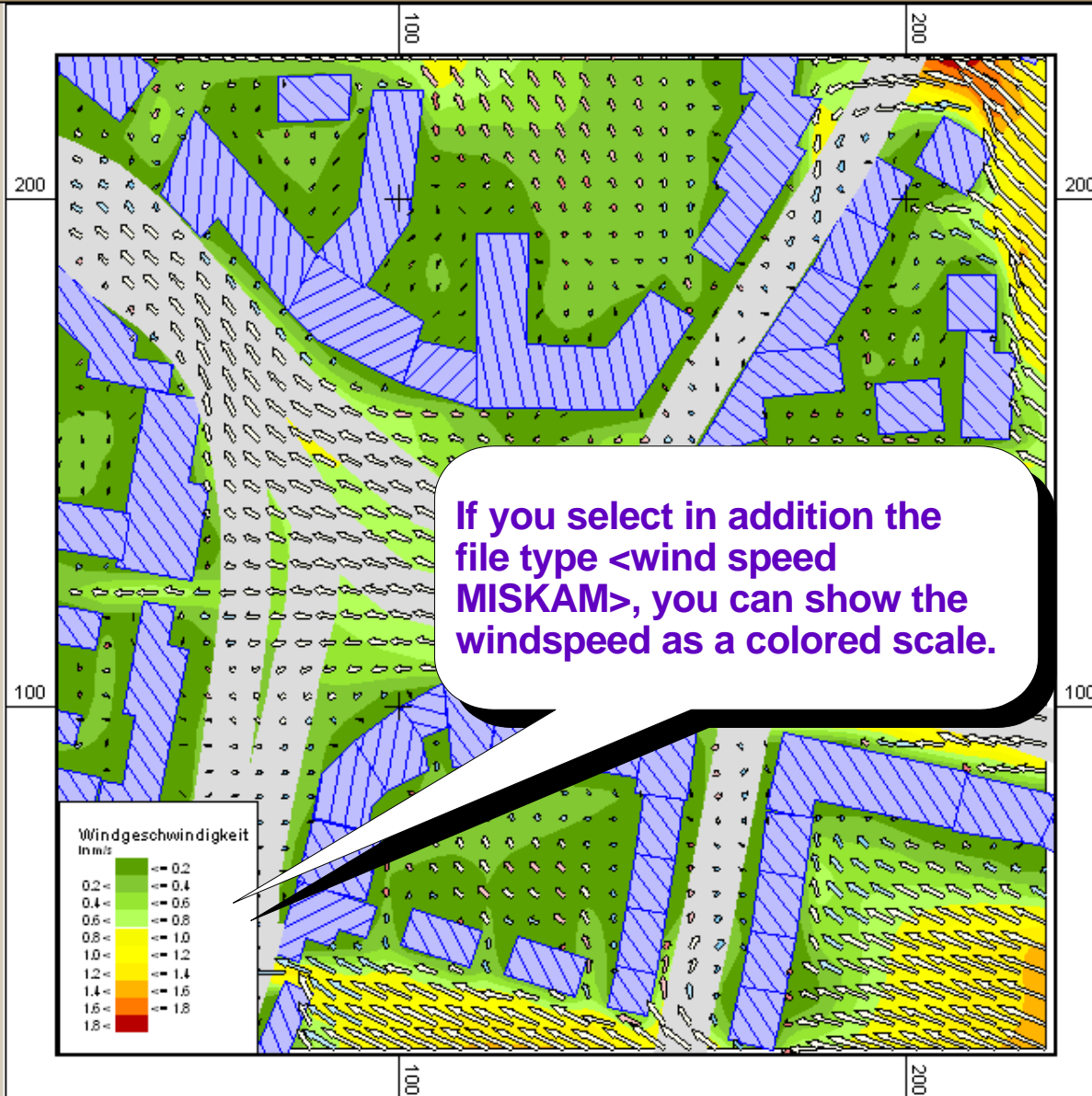
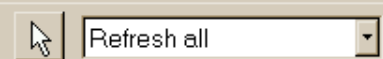
MISKAM Vollversion

Windfeld
in 2,5 m Höhe

120 °,
Höhe)

...and
the
layer
you
want to
see

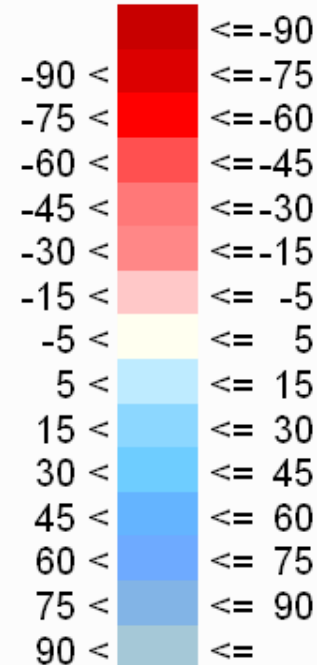
15 <	<= 30
30 <	<= 45
45 <	<= 60
60 <	<= 75
75 <	<= 90
90 <	<=

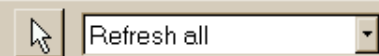


MISKAM Vollversion

Windfeld
in 2,5 m Höhe
(Wind 3m/s aus 120 °,
gemessen in 30 m Höhe)

Auslenkung
in ° zur Horizontalen





















The concentration of pollution can be shown as mean result, maximum result and single case result.
The presentation can be as isolines or grid, with several presentation types, i.e. also as grid texts.

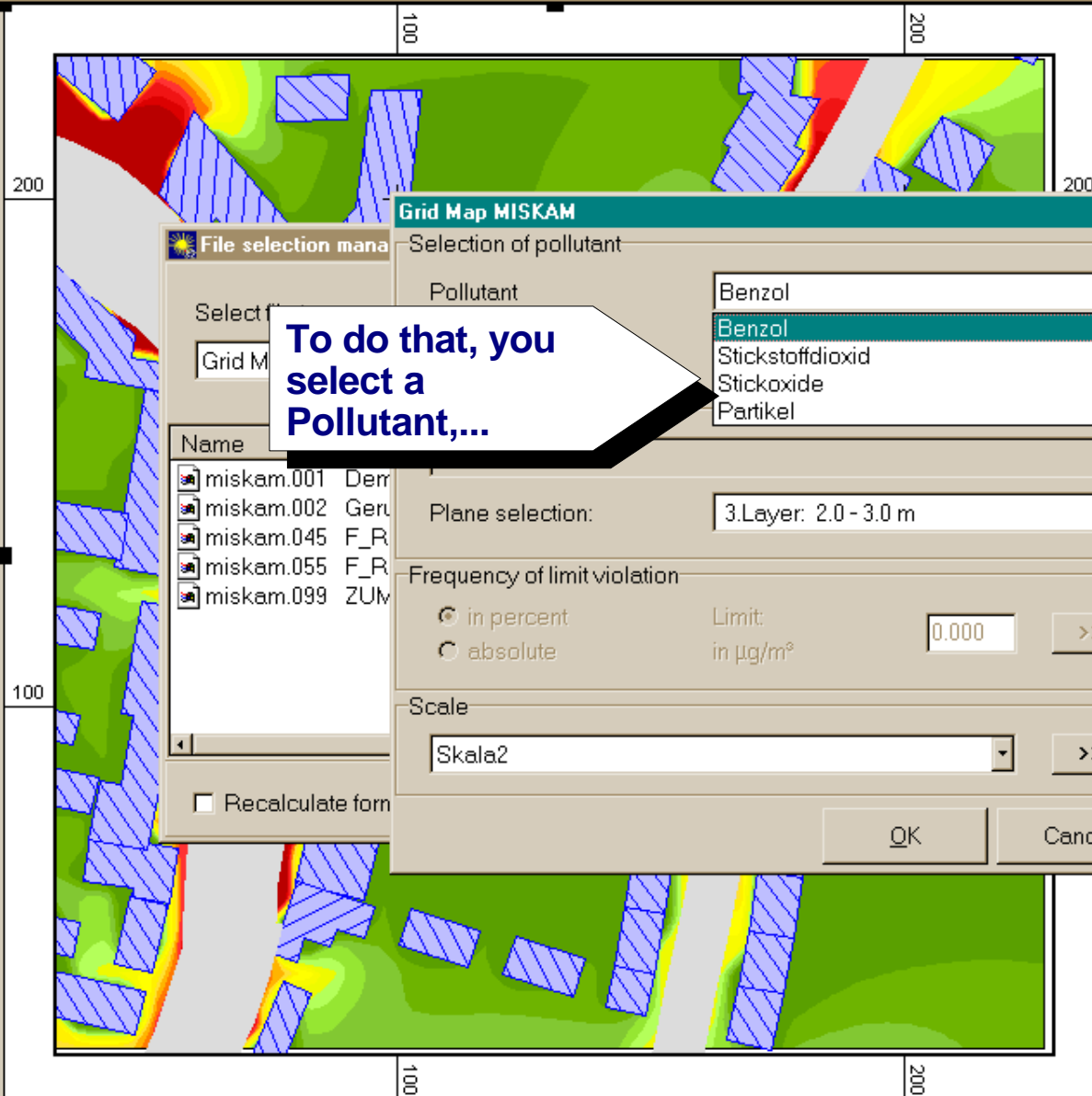
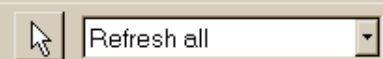
MISKAM Screening

Schadstoffausbreitung
in 2,5 m Höhe
(Maximalwert)

Benzol

in $\mu\text{g}/\text{m}^3$

	≤ 1.0
	$1.0 < \leq 1.5$
	$1.5 < \leq 2.0$
	$2.0 < \leq 2.5$
	$2.5 < \leq 3.0$
	$3.0 < \leq 3.5$
	$3.5 < \leq 4.0$
	$4.0 < \leq 4.5$
	$4.5 < \leq 5.0$
	$5.0 < \leq 5.5$
	$5.5 < \leq 6.0$
	$6.0 < \leq 6.5$
	$6.5 < \leq 7.0$
	$7.0 < \leq 7.5$
	$7.5 < \leq 8.0$
	$8.0 <$



To do that, you select a Pollutant,...

Grid Map MISKAM

Selection of pollutant

Pollutant: Benzol

Select: Grid Map

Name: miskam.001 Derr

Plane selection: 3.Layer: 2.0 - 3.0 m

Frequency of limit violation

☒ in percent Limit: 0.000 >>

☐ absolute in $\mu\text{g}/\text{m}^3$

Scale: Skala2 >>

☐ Recalculate form

OK Cancel

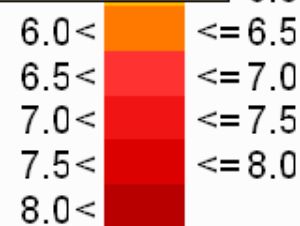
MISKAM Screening

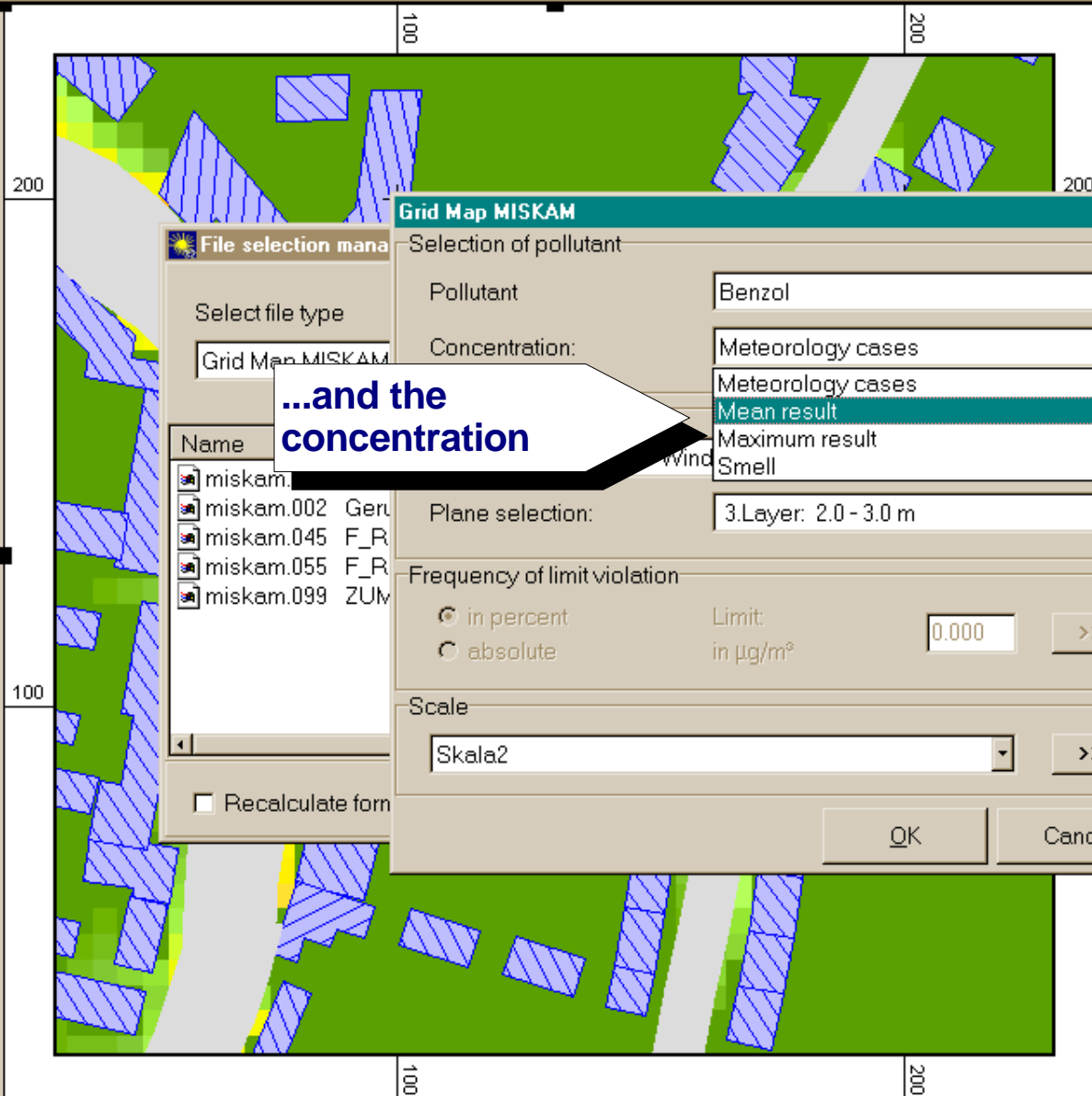
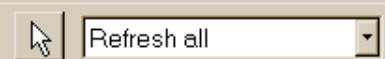
Schadstoffausbreitung
in 2,5 m Höhe

(t)

Description
DIE GRAFIK
population of traffic source

= 1.0
= 1.5
= 2.0
= 2.5
= 3.0
= 3.5
= 4.0
= 4.5
= 5.0
= 5.5
= 6.0





Grid Map MISKAM

File selection manager

Select file type
Grid Map MISKAM

Name
miskam.
miskam.002 Ger
miskam.045 F_R
miskam.055 F_R
miskam.099 ZUM

Selection of pollutant
Pollutant: Benzol
Concentration: Meteorology cases
Mean result
Maximum result
Smell

Plane selection:
3.Layer: 2.0 - 3.0 m

Frequency of limit violation
☒ in percent Limit: 0.000 >>
☐ absolute in µg/m³

Scale
Skala2 >>

☐ Recalculate form

OK Cancel

...and the concentration

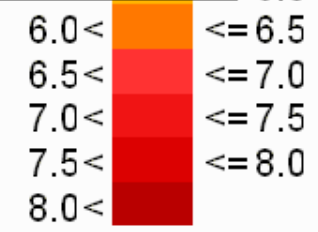
MISKAM Vollversion

Schadstoffausbreitung
in 2,5 m Höhe

(120°)

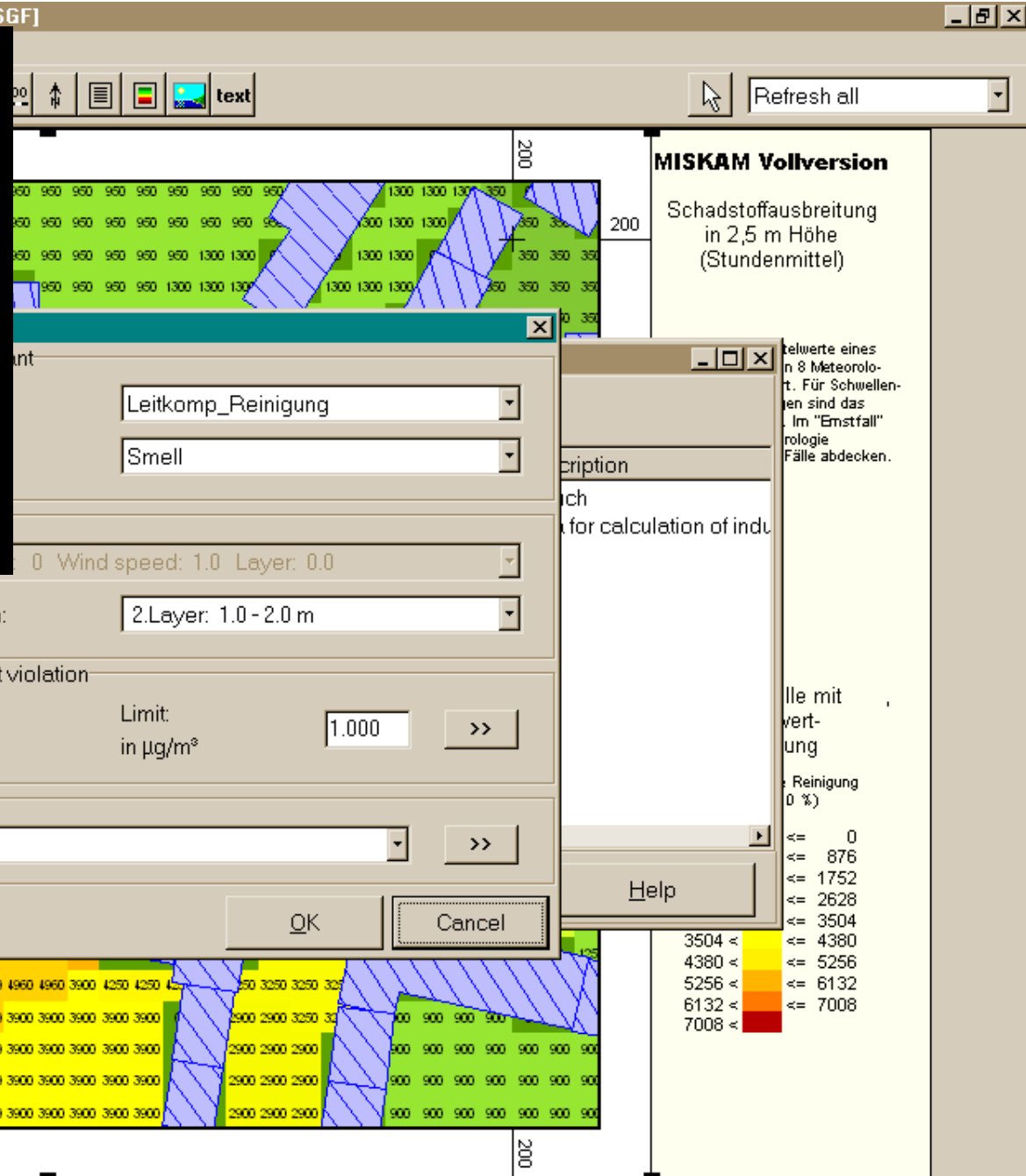
Description
DIE GRAFIK
Calculation of traffic source

- = 1.0
- = 1.5
- = 2.0
- = 2.5
- = 3.0
- = 3.5
- = 4.0
- = 4.5
- = 5.0
- = 5.5
- = 6.0



The Item "smell" allows you to show, how many cases exceed a certain, userdefined limit. You can also choose, if you like to see the number of cases or the percentage.

Don't do this, if you have only 8 or 12 meteorological classes like in this example! The results will be correct, but not true! Try it with 24 or 36 cases. That needs much more time, but it brings believable results.



Thank you
very much!

Press the esc-key to exit